

Section 13 - West Colorado River Basin Disaster and Emergency Response

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Section 13

West Colorado River Basin - Utah State Water Plan

Disaster and Emergency Response

13.1 Introduction

This section discusses flood hazard mitigation and disaster response related to possible pre-disaster or immediate actions at the time of the disaster to protect the water resources. It also describes programs and mechanisms now in place along with those needed.

It is generally inefficient to react to a disaster or emergency after it has occurred. This wastes time, money and other resources. There is also the possibility of loss of life and threats to health and welfare. Pre-disaster activities such as flood plain management, hazard mitigation and mitigation planning are the preferred approaches.

13.2 Background¹⁷

All levels of government have the statutory authority to carry out disaster-related programs, including pre- and post-disaster hazard activities. There is one problem. No one entity has all of the necessary authority to implement actions to mitigate a specific hazard or disaster. The *Utah State Water Plan* (1990) discusses the specific authorities and assistance programs available to the various agencies. These are discussed in Section 3, Introduction; Section 13, Disaster and Emergency Response; and Section 16, Federal Water Planning and Development. The Division of Comprehensive Emergency Management (CEM) is responsible for disaster and emergency response at the state level while the Federal Emergency Management Agency and the Corps of Engineers are responsible at the federal level. Requests for federal assistance should be made through CEM.

Society must protect its water resources from any disaster or emergency. Preparedness is the key to alleviating traumatic experiences for those affected.

13.3 Organizations and Regulations⁵⁴

To effectively prepare for most types of disasters and manage the eventual clean-up and/or rebuilding process, a complex organization consisting of local, state and federal agencies has been put in place.

13.3.1 Local

Local governments are required by the Division of Comprehensive Emergency Management to carry out the following tasks to provide an effective first response:

- Prepare an emergency operations plan for the coordination of local and county emergency responses, and link it to potential assistance from appropriate federal and state agencies.
- Provide necessary resources (including special supplies and equipment) to support emergency relief operations and list these resources. Procedures to be followed for obtaining assistance and use of resources in the emergency operation plans should be included.
- Assign and train personnel needed to carry out disaster relief functions.
- Provide the State Disaster Coordinating Officer with copies of current emergency operations plans.

- Recommend changes to state and local emergency disaster relief procedures and assigned functions as needed.

Cities and counties have primary responsibility for disaster response as stated in Titles 10 and 17 of *Utah Code Annotated, 1953*, as amended. Most local governments have delegated disaster responsibilities to specific individuals. Positions responsible for disaster response in each county are shown in Table 13-1.

13.3.2 State

The Division of Comprehensive Emergency Management (CEM) provides a statewide system or plan encouraging and assisting counties and cities with activities relating to emergencies and disasters including emergency response and management plans. These are comprehensive in scope but allow effective and close cooperation with state and federal agencies in event of a disaster beyond local capabilities. The CEM also works closely with other state and federal agencies to assure needed resources reach areas seriously affected by a major disaster. This is done primarily through the Inter-Agency Technical Team (IAT) consisting of technical experts from virtually every discipline relating to water and natural resources representing many state and federal agencies. The CEM's hazard mitigation officer is the coordinator for the IAT and may be contacted at 538-3400 for assistance.

When the extent of the disaster or emergency is beyond local capability, the governor, at his discretion, can declare a "state of emergency" and provide state assistance. The governor may also request federal assistance if deemed necessary. At this time, the State Disaster Coordinating Officer (SDCO) becomes the governor's primary contact and assumes all responsibility for distributing state and federal assistance to alleviate local disasters. This is carried out in cooperation with local disaster officials.

13.3.3 Federal²³

The President of the United States may declare a major disaster at any time, usually at the governor's request. At this time, federal assistance is provided

for disaster response, recovery, preparedness and mitigation through the Federal Emergency Management Agency (FEMA). This assistance is distributed under the direction of the federal coordinating officer designated by FEMA and the SDCO.

Other federal agencies also have disaster-related assistance programs. Most of these can be invoked under agency policies and guidelines even though a presidential disaster declaration does not exist. These are generally coordinated through state and local officials. Specific programs are provided by agencies such as the Corps of Engineers, Farm Service Agency, Natural Resources Conservation Service and Civil Air Patrol.

The National Flood Insurance Program (NFIP) is administered by FEMA. This program requires flood insurance on all development in the flood plains as determined by topographic surveys. Lack of flood insurance denies use of any federal or federally insured monies for development in flood plains.

13.4 Water-Related Problems

Water-related problems are going to occur; it's just a matter of where and when. Preparing ahead of time can reduce the effects of disasters and emergencies, saving time, money, suffering, and possibly even preventing loss of life.

13.4.1 Floodwater Problems

Emergency flooding in the West Colorado River Basin is caused by three types of storms. One of these is the general winter storm occurring between November and April, producing the upper watershed snowpack. The other two are the general storms occurring between May and October and the summer thunderstorms which normally occur between July and October.

Sustained flooding is usually a result of extremely high snow packs in the upper watershed areas. Floods of this nature usually impact the Price River, San Rafael River, Muddy Creek, Fremont River, and Escalante and Paria rivers. High peak flood flows are the result of local thunderstorms concentrating in smaller areas.

| Table 13-1 Disaster Response Responsibility | | |
|--|---------------------------------|-------------------------|
| County | Responsible Position | Telephone Number |
| Carbon | Director - Emergency Services | (435) 636-3290 |
| Emery | Sheriff - Civil Defense | (435) 381-2404 |
| Garfield | Sheriff - Emergency Services | (435) 676-2678 |
| Grand | Director - Emergency Management | (435) 259-1363 |
| Kane | Director - Emergency Services | (435) 644-2551, Ext. 40 |
| Sanpete | Director - Civil Defense | (435) 835-2191 |
| Sevier | Director - Emergency Services | (435) 896-4890 |
| Utah | Director - Emergency Management | (801) 343-4131 |
| Wayne | Director - Emergency Management | (435) 425-3040 |

Natural and man-made obstructions such as bridges across streams, brush, large trees and other vegetation growing along streambanks in floodplain areas can also effect flooding. In general, obstructions restrict flood flows and can cause over-bank flows; unpredictable areas of flooding; destruction of or damage to bridges, homes and businesses; and increased flow velocity immediately downstream resulting in channel scouring. A new flash-flood potential indicator is now used by the National Weather Service, National Park Service and local television stations to warn recreationists using these areas.

Alluvial fan flooding is usually characterized by unpredictable flow paths and high velocities that occur with little advance warning. Development pressure on alluvial fan areas is intensifying, creating a critical need to provide guidance to communities, developers and citizens on how to safely accommodate growth while protecting lives and property.

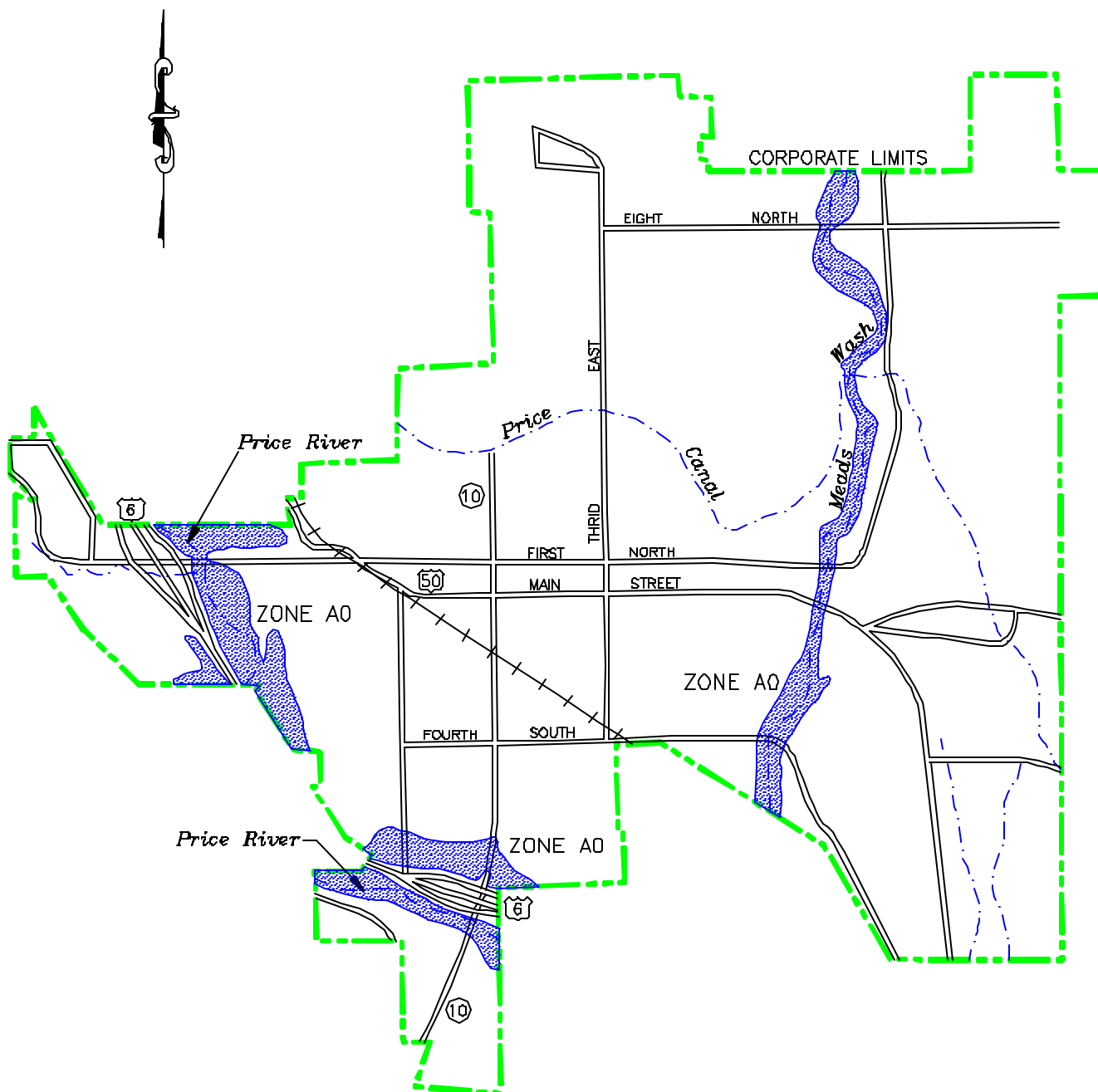
Flood plain maps have been prepared for many communities. Figures 13-1, 13-2, 13-3 and 13-4 show examples for Price, Castle Dale, Loa and Escalante. Table 13-2 lists all of the Division of Community Emergency Management flood plain

maps available in the West Colorado River Basin. The Federal Emergency Management Agency flood plain boundaries shown are approximate, and those living outside the boundaries should not assume they are without risk from flooding.

In many communities located within the West Colorado River Basin, the danger of potential irrigation canal breaks exists. Many canals are built on hillsides above towns and pose a threat to the population. Table 13-3 lists the basin's major canals that may have a potential for damages to the resident population if they were to breach or break.

13.4.2 Droughts

Drought caused by low average precipitation is a continuing problem because most of the basin is low in elevation with only the western rim, the Wasatch Plateau and the Boulder Mountains rising high enough to have a major orographic effect. The relatively low snowpack limits the annual water yield rates along with corresponding streamflow volumes and groundwater aquifer recharge. Refer to Section 5, Water Supply and Use, for streamflow data and to Section 19, Groundwater, for aquifer information.



Legend

 100-Year Flood Plain Area

Zone A0 Flood Depths 1-3 Feet
and Velocities Determined.

Source: Federal Emergency Management Agency (FEMA)

Effective date: 12-3-93

Figure 13-1
PRICE 100-YEAR FLOOD PLAIN
West Colorado River Basin

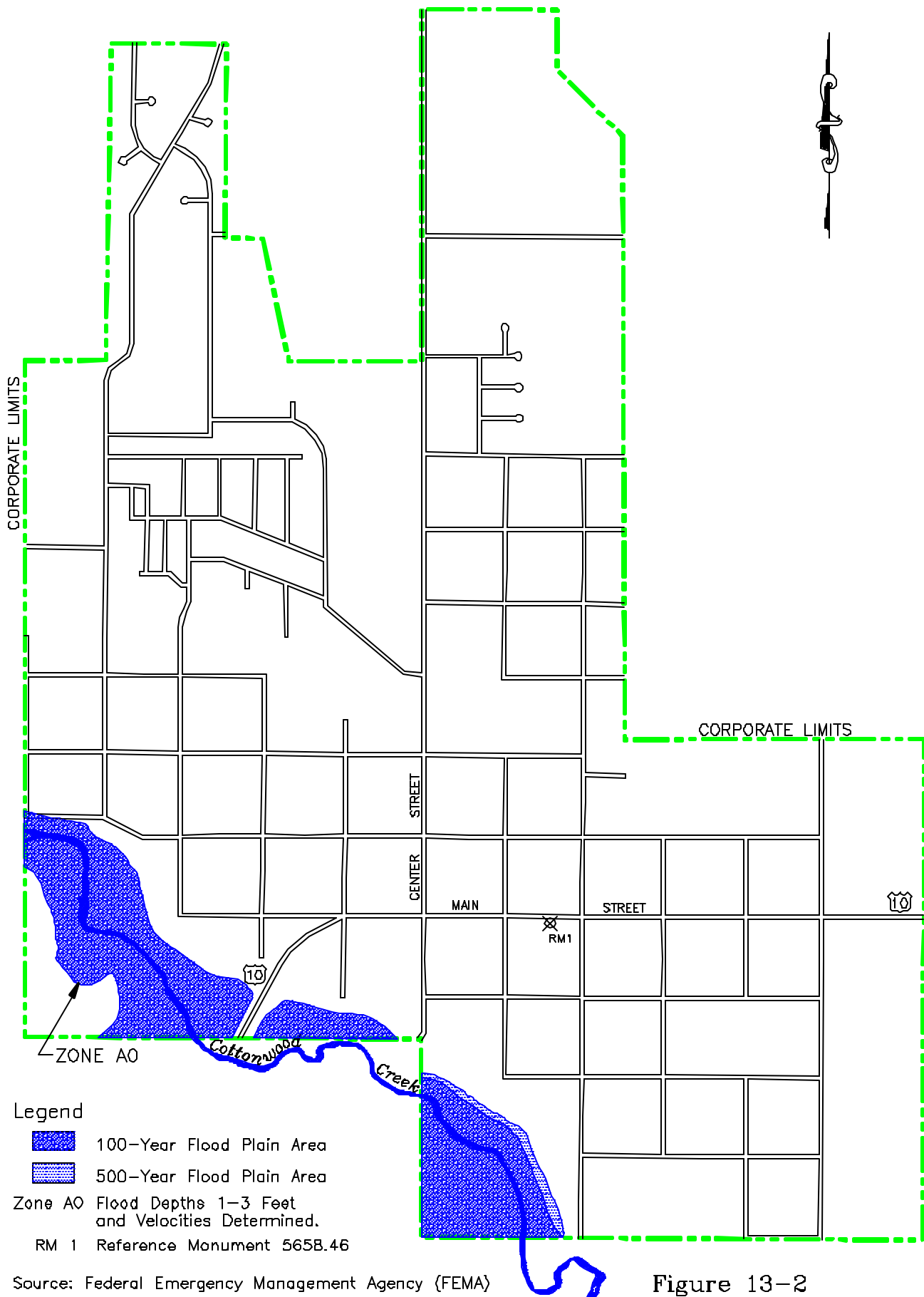
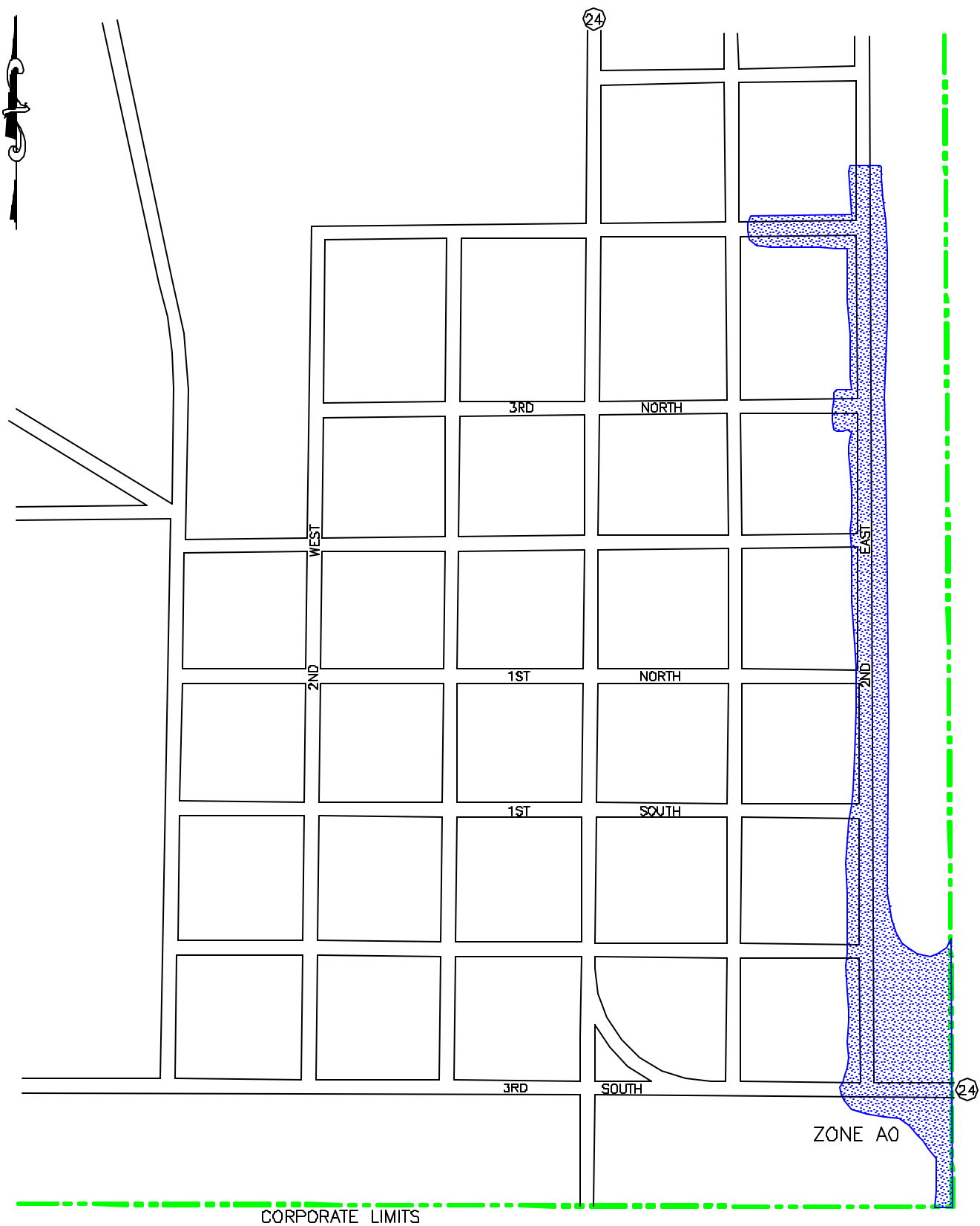


Figure 13-2

CASTLE DALE 100-YEAR FLOOD PLAIN West Colorado River Basin



Legend

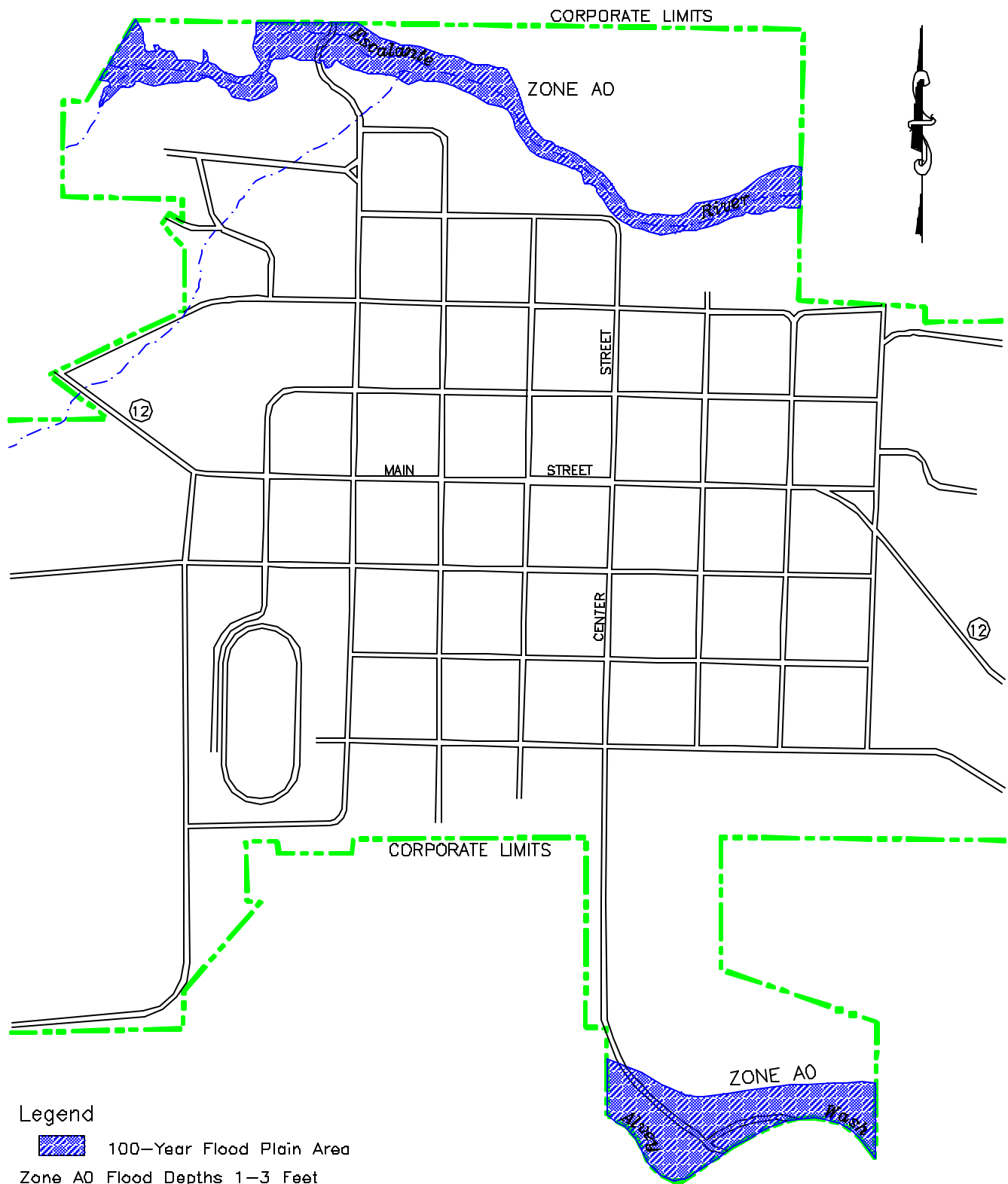


100-Year Flood Plain Area

Zone A0 Flood Depths 1-3 Feet
and Velocities Determined.

Source: Federal Emergency Management Agency (FEMA)
Effective date: 12-20-74

Figure 13-3
LOA 100-YEAR FLOOD PLAIN
West Colorado River Basin



Legend



100-Year Flood Plain Area

Zone A0 Flood Depths 1-3 Feet
and Velocities Determined.

Source: Federal Emergency Management Agency (FEMA)

Effective date: 8-28-79

Figure 13-4

ESCALANTE 100-YEAR FLOOD PLAIN
West Colorado River Basin

**Table 13-2
Available Flood Plain Maps**

| Counties | Towns or Areas |
|----------|--|
| Carbon | Unincorporated County Helper Price East Carbon Sunnyside |
| Emery | Castle Dale Emery Green River Orangeville Huntington Ferron |
| Wayne | Loa |
| Garfield | Unincorporated County Escalante Tropic Henrieville |
| Kane | Unincorporated County |

13.4.3 Other Water-Related Disasters

Other disasters can impact water supplies. These disasters include such things as structural failure of water supply facilities, toxic spills, sabotage, landslides and earthquakes. Generally, these are more localized in nature than flooding or drought. Toxic spills are most likely to occur along highways such as those in Price Canyon, Huntington Canyon, along I-70, the lower Fremont River, and through Escalante and Boulder.

13.5 Flood Prevention and Drought Reduction Alternatives

For the most part, water storage reservoirs only have a moderate effect on the flood flows in major drainages. Their effect is greater as the drainages become smaller. Studies should be made to determine the flood control possibilities of reservoirs on the major drainages where there are recurring floods. Recent studies of the West Colorado River Basin by the Corps of Engineers have determined flood control structures are not

economically justified from a federal perspective. However, local efforts should be undertaken if flood control funds become available. See Section 9.5.2 for data on potential reservoir sites that could include flood control features.

In conjunction with the flood control studies, investigations should be conducted in the upper watershed areas to determine the possibility of long-range flood reduction through installation of non-structural measures and applying good management activities. Flood plain management is a viable alternative especially where they serve as groundwater recharge zones.

13.6 Disaster Response Recommendations

It is always more effective to have plans and/or facilities in place prior to any disaster response requirements. There are several actions that could be put in place to alleviate disaster situations. Suggested actions include the following:

- Better planning and zoning.
- Development of disaster response plans by individual communities and counties.
- Continuation of cloud-seeding programs.
- Family emergency plans.

The Division of Comprehensive Emergency Management suggests all residents prepare a 72-hour emergency survival kit. According to experts in the field, this will allow adequate time for relief efforts to reach most residents. Along with preparing this kit, families should develop their own emergency plan outlining each member's responsibility during a disaster. Emergency preparedness drills are a good way to familiarize family members with their duties and help ensure their safety.

Hazard mitigation may include structural and non-structural activities as they relate to flood prevention. Continued active involvement in the National Flood Insurance Program is essential to ensure adequate floodplain management objectives are in place to reduce flood losses. Hazard mitigation plans can be implemented by communities to deal with specific identified

**Table 13-3
Major West Colorado River Basin Canals**

| Canal Name by Owner | Capacity (cfs) | Length (miles) | Lining Type | Potential Populated Disaster Areas |
|---|----------------|----------------|---|---|
| Price River Drainage - Carbon County | | | | |
| Carbon Canal Company Carbon Canal | 140 | 38 | Earth | West side of Price, Westwood and Robertson subdivisions |
| Price River Water Users Association Price-Wellington Canal | 90 | 32 | Earth ¹ | North half of Price and Wellington |
| Spring Glen Canal Company Spring Glen Canal | 36 | 12 | Earth | Spring Glen |
| San Rafael River Drainage - Emery County | | | | |
| Cottonwood Creek Consolidator Irrigation Co. Blue Cut Canal | 40 | 6 | Earth (Piped through Orangeville) | None |
| Great Western Canal | 74 | 3 | Earth | None |
| - Clipper Canal | 40 | 4 | Earth | Orangeville |
| - Western Canal | 40 | 4 | Earth | Orangeville |
| Mammoth Canal | 90 | 10 | Earth | North side of Orangeville |
| BOR/Emery Water Conservation District Cottonwood Creek-Huntington Canal (Joes Valley Canal) | 175 | 17 | 5 mi. membrane, 12 mi. earth | Orangeville, Castledale, Huntington |
| Huntington North Reservoir Service Canal | 35 | 3 | 1 mi. concrete, ½ mi. clay, 2.5 miles earth | None |

Table 13-3 (Continued)
Major West Colorado River Basin Canals

| Canal Name by Owner | Capacity (cfs) | Length (miles) | Lining Type | Potential Populated Disaster Areas |
|--|-----------------|----------------|-------------|---|
| Huntington Cleveland Irrigation Company Cleveland Canal | 220 | 30 | Earth | Cleveland |
| Huntington Canal | 100 | 25 | Earth | Huntington |
| - Lawrence Branch | 40 | 5 | Earth | Lawrence |
| North Ditch | 100 | 15 | Earth | Farm homes north side of Huntington |
| Ferron Canal and Reservoir Company North Ditch | 20 ² | 8 | Earth | None |
| South Ditch | 40 ² | 3 | Earth | None |
| Dirty Devil River Drainage - Emery and Wayne Counties | | | | |
| Caineville Canal Company Caineville Canal | 17 | 8 | Earth | Farm homes in Caineville |
| Fremont Irrigation Company Fremont Town Ditch | 30 | 4 | Earth | Fremont |
| Highline Canal | 100 | 15 | Earth | Lyman |
| Loa Town Canal | 50 | 4 | Earth | Loa |
| Hanksville Canal Company Hanksville Canal | 12 | 1.5 | Earth | Hanksville sewage lagoons and some farm homes in Hanksville |
| Muddy Creek Irrigation Company Emery Canal | 110 | 9 | Earth | North part of Emery |
| Independence Canal | 40 | 3 | Earth | None |
| Torrey Irrigation Company Torrey Canal | 40 | 12 | Earth | Small portion of Torrey |

¹Currently being replaced by pipe.

²Capacities after pipeline project. Completion date spring 2000.

potential disasters, such as flooding and alluvial fan development.

13.7 Policy Issues and Recommendations

Three policy issues regarding hazards, disasters and emergencies are discussed below. Local units of government have the prime responsibility for resolving most of these policies. Refer to the *Utah State Water Plan (1990)*, Section 13, for related issues and information.

13.7.1 Flood Plain Management

Issue - Local governments need to become aware of their responsibilities as they relate to flood plain management.

Discussion - The National Flood Insurance Program (NFIP) was established by Congress in 1968 as a result of large federal outlays for structural measures and disaster relief. Its purpose is to (1) reduce flood losses, (2) prevent unwise development in floodplains, and (3) provide affordable flood insurance to the public. Local entities should conduct educational programs on flood hazard awareness and the benefits of participation in the NFIP.

All counties within the West Colorado River Basin participate in the NFIP. A community agrees to enact and enforce minimum flood plain management requirements as stated in the *Code of Federal Regulation (CFR)*, Part 60.3. In exchange for enforcing these regulations, flood insurance is made available within the participating community. These regulations apply to new construction and substantial improvements.

The Division of Comprehensive Emergency Management is the state coordinating agency for the NFIP. The office can assist local participating communities in the implementation of the flood plain management objectives defined by the NFIP.

Also, the Corps of Engineers, through its Flood Plain Management Program, can develop flood plain boundary maps at no cost for those communities which need one or update those which do not adequately reflect current conditions.

Recommendation - Non-participating local entities should become qualified to participate in the

National Flood Insurance Program. The Division of Comprehensive Emergency Management can assist communities in these objectives.

13.7.2 Flood Prevention and Floodwater and Sediment Control

Issue - Measures need to be taken to prevent future damages from flooding.

Discussion - Records are available of floods occurring since the earliest settlements in the basin. These floods have mostly damaged agricultural developments and facilities. In recent times, they have caused increasing damage to residential areas. Water control structures can be constructed for floodwater control and sediment storage or these features can be included in storage reservoirs constructed for other purposes. Other measures for controlling floodwater and sediment include non-structural and structural measures as well as proper management activities in the upper watershed areas.

Several state and federal agencies have programs and funding for floodwater and sediment control. These agencies should be consulted for assistance to local entities.

Recommendation - Counties should establish floodwater control committees to develop and carry out flood prevention plans and to assist other entities with flood problems. Appropriate state agencies should assist.

13.7.3 Drought Plans

Issue - Each county should have a drought response plan in place.

Discussion - The affects of drought can be alleviated by preparing ahead of time. The most significant impacts will be on agriculture, culinary water supplies, tourism and wildlife. Electric power generation and water quality can also be affected. As the demand for water increases in the future, the impacts of drought may be more devastating and far reaching.

When drought plans are prepared, communities can be ready to deal with water shortages. Drought plans should establish priorities of water use and alternative sources of supply and plans can also

bring about the timely application of the resources available statewide.

It may be desirable for two or more counties or parts of counties to join together and prepare one drought plan. This is particularly true where they are similar in climate and physiography as well as have similar socio-economic factors.

Recommendation - Each county should prepare or have available a drought response plan. ●

